

REMARKS

Status of the Claims

Claims 1-26 and 29-31 are pending in the present application. Claims 1-22 are withdrawn as directed to a non-elected invention. Claims 27 and 32 were previously cancelled. Claim 23 is amended to clarify that each of the microwells is used to recover the stored single specimen organic cell therefrom. Support for this amendment is found, for example, in canceled claim 28. Claim 23 is also amended to clarify that adhesion of the organic cells is prevented and recovery is facilitated by the presence of the fluorocarbon film. Support for this amendment is found, for example, in embodiment 4 of the originally filed application. Claim 31 is amended to depend on claim 23. Claim 31 is also amended to specify that the surface is silicon. Support for this amendment is found, for example, in pending claim 30. No new matter is added by way of this amendment. Reconsideration is respectfully requested.

The instant amendment is being submitted with a Request for Continued Examination, (RCE). Applicants respectfully request entry of the instant amendment and the amendment submitted on May 10, 2010.

Issues under 35 U.S.C. § 102(e)

In the May 17, 2010, Advisory Action, the Examiner stated that claim 31, as submitted in the May 10, 2010, response would remain rejected under 35 U.S.C. § 102(e), after entry, as allegedly anticipated by U.S. Publication No. 2005/0220675 to Reed *et al.*, ("Reed"), *see also* March 11, 2010, Final Office Action, pages 3-4. Applicants respectfully traverse.

In an effort to expedite prosecution, claim 31 is amended to incorporate all of the elements of claim 23, which was not rejected under 35 U.S.C. § 102(e). Accordingly, Applicants submit that Reed does not anticipate amended claim 31. Withdrawal of the rejection is respectfully requested.

Issues under 35 U.S.C. § 103(a)

Claims 23-26 and 28-30 remain rejected under 35 U.S.C. § 103(a) as allegedly obvious over U.S. Publication No. 2002/0072116 to Bhatia *et al.*, ("Bhatia"), in view of U.S. Patent No. 6,197,575 to Griffith *et al.*, ("Griffith"), *see* March 11, 2010, Final Office Action, pages 4-6 and May 17, 2010, Advisory Action. Applicants respectfully traverse.

Basis for the Rejection

In the Final Office Action of March 11, 2010, the Examiner alleges that Bhatia teaches all of the elements of the instant claims except for a fluorocarbon film, which is coated on the interior surface of the microwells. Nevertheless, the Examiner believes that Griffith remedies the deficiencies of Bhatia. The Examiner states that an ordinary artisan would have been motivated to use the fluorocarbon polymer coating suggested by Griffith within the wells of Bhatia to form a hydrophobic layer within the well, which would allow the well to be tailored for cell adhesion, for example, by adding extra-cellular matrix proteins.

In the May 17, 2010, Advisory Action, the Examiner indicated that all of the features of amended claim 23, as submitted in the May 10, 2010, response would not be accorded patentable weight. In particular, the Examiner asserted that the phrase “wherein the interior surface of said microwells prevents adhesion of the organic cell and facilitates recovery of the organic cell from the microwell” is an intended use and not a structural limitation.

The claimed invention

As presently amended, claim 23 is directed to a microwell array chip made of silicon and having multiple microwells, each microwell being used to store a single specimen organic cell and to recover the stored single specimen organic cell therefrom, wherein each microwell is of a size and shape holding just one organic cell, wherein the interior surface of said microwells is coated with a fluorocarbon film, so that the interior surface of said microwells prevents adhesion of the organic cell and facilitates recovery of the stored organic cell from the microwell.

Amended claim 23 describes functional attributes of the claimed microwell array chip, which are entitled to patentable weight

Applicants submit that amended claim 23, which specifies “wherein the interior surface of said microwells is coated with a fluorocarbon film, so that the interior surface of said microwells prevents adhesion of the organic cell and facilitates recovery of the stored organic cell from the microwell” does not describe an intended use, but rather a functional attribute of the claimed microwell array chip. Functional limitations are to be accorded patentable weight.

According to the MPEP at § 21730.5 “[t]here is nothing inherently wrong with defining some part of an invention in functional terms. Functional language does not, in and of itself, render a claim improper. A functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used.”

The cited references do not teach or suggest all of the elements of the instant claims

As noted above, amended claim 23 specifies “wherein the interior surface of said microwells is coated with a fluorocarbon film so that the interior surface of said microwells prevents adhesion of the organic cell and facilitates recovery of the stored organic cell from the microwell.” This amendment indicates that the instant microwells cannot include structural elements that would promote, rather than prevent, adhesion of organic cells. Accordingly, claim 23 cannot, for example, encompass microwells that structurally include a layer of extra-cellular matrix proteins, such as those described in U.S. Publication No. 2002/0072116 to Bhatia *et al.*, (“Bhatia”) and U.S. Patent No. 6,197,575 to Griffith *et al.*, (“Griffith”), which were cited against the instant claims. That is, the microwells of Bhatia and Griffith include extra-cellular matrix proteins, which promote, rather than prevent, organic cell adhesion, *see also* Applicants’ response of May 11, 2010. Accordingly, the combination of references does not teach or suggest all of the elements of the instant claims.

The instantly claimed invention results in unexpected benefits

Moreover, Applicants submit that the claimed invention results in benefits that could not have been expected by an ordinary artisan from the cited references. As discussed in the Obata Declaration and Embodiment 4 of the originally filed application, the collection rate of samples, which do not have a fluorocarbon film coating on the interior surface of microwells, ranges from 0% to 10%. In contrast, the collection rate of samples from the interior surfaces of microwells, which have a coating of fluorocarbon film, ranges from 30% to 89.3%.

As the Examiner acknowledges in the March 11, 2010, Office Action, Bahtia does not describe fluorocarbon films, *see* March 11, 2010, Final Office Action, page 5, item 16. The Examiner further states that Griffith indicates that fluorocarbon film is useful for the adsorption

of extra-cellular matrix proteins, which enable cell adhesion to the walls of the channels *see* March 11, 2010, Final Office Action, pages 5-6, item 17. Accordingly, an ordinary artisan could not have reasonably expected from these references that coating microwells with fluorocarbon film would have resulted in the high collection rate of cells reported by the instant inventors.

In view of the foregoing, the claims are not rendered obvious by the cited references. Withdrawal of the rejection is respectfully requested.

CONCLUSION

In view of the above amendment, remarks, and the Obata Declaration submitted herewith, Applicants believe the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Linda T. Parker, Ph.D., Registration No. 46,046, at the telephone number of the undersigned below to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Director is hereby authorized in this, concurrent, and future replies to charge any fees required during the pendency of the above-identified application or credit any overpayment to Deposit Account No. 02-2448.

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Respectfully submitted,

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Attachments